



#4

SEQUENCE LISTING

<110> Kleanthous, Harold
Lissolo, Ling
Tomb, Jean-Francois
Miller, Charles
Al-Garawi, Amal

<120> Helicobacter GHPO 1360 and GHPO 750
Polypeptides and Corresponding Polynucleotide Molecules

<130> 06132/037002

<140> US 10/039,183
<141> 2002-01-03

<150> US 08/831,310
<151> 1997-04-01

<160> 18

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 1149
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (106) ... (1002)

<221> sig_peptide
<222> (106) ... (166)

<400> 1
ttactcttta atgtgagttt tctgtgtcat gatagctgat tttgtttaa atttgctata 60
atgtgaattt aatgatgaaa attagtttag agtggagaac acaca atg aaa aaa aat 117
Met Lys Lys Asn
-20

atc tta aat tta gcg tta gtg ggt gcg ttg agc acg tcg ttt ttg atg 165
Ile Leu Asn Leu Ala Leu Val Gly Ala Leu Ser Thr Ser Phe Leu Met
-15 -10 -5

gct aag ccg gct cat aac gca aat aac gct acg cat aac acg aaa aaa 213
Ala Lys Pro Ala His Asn Ala Asn Ala Thr His Asn Thr Lys Lys
1 5 10 15

acg act gat tct tca gca ggc gtg tta gcg aca gtg gat ggc aga cct 261
Thr Thr Asp Ser Ser Ala Gly Val Leu Ala Thr Val Asp Gly Arg Pro
20 25 30

atc act aaa agc gat ttt gac atg att aag caa cga aat cct aat ttt 309
Ile Thr Lys Ser Asp Phe Asp Met Ile Lys Gln Arg Asn Pro Asn Phe
35 40 45

gat ttt gac aag ctt aaa gag aaa gaa aaa gaa gcc ttg att gat caa	357
Asp Phe Asp Lys Leu Lys Glu Lys Glu Lys Ala Leu Ile Asp Gln	
50 55 60	
gct att cgc acc gcc ctt gta gaa aat gaa gct aaa acc gag aaa ttg	405
Ala Ile Arg Thr Ala Leu Val Glu Asn Glu Ala Lys Thr Glu Lys Leu	
65 70 75 80	
gac agc act cca gaa ttt aaa gcg atg atg gaa gcg gtt aaa aaa cag	453
Asp Ser Thr Pro Glu Phe Lys Ala Met Met Glu Ala Val Lys Lys Gln	
85 90 95	
gct tta gtg gaa ttt tgg gct aaa aaa cag gct gaa gaa gtg aaa aaa	501
Ala Leu Val Glu Phe Trp Ala Lys Lys Gln Ala Glu Glu Val Lys Lys	
100 105 110	
gtc caa atc cca gaa aaa gaa atg caa gat ttt tac aac gct aac aaa	549
Val Gln Ile Pro Glu Lys Glu Met Gln Asp Phe Tyr Asn Ala Asn Lys	
115 120 125	
gat cag ctt ttt gtc aag caa gaa gcc cat gct agg cat att tta gtg	597
Asp Gln Leu Phe Val Lys Gln Glu Ala His Ala Arg His Ile Leu Val	
130 135 140	
aaa acc gaa gat gag gct aaa cgg att att tct gag att gac aaa cag	645
Lys Thr Glu Asp Glu Ala Lys Arg Ile Ile Ser Glu Ile Asp Lys Gln	
145 150 155 160	
cca aag gct aaa aaa gaa gct aaa ttc att gag tta gcc aat cgg gat	693
Pro Lys Ala Lys Lys Glu Ala Lys Phe Ile Glu Leu Ala Asn Arg Asp	
165 170 175	
acg att gat cct aac agc aag aac gcg caa aat ggc ggt gat ttg ggg	741
Thr Ile Asp Pro Asn Ser Lys Asn Ala Gln Asn Gly Gly Asp Leu Gly	
180 185 190	
aaa ttc caa aag aac caa atg gct ccg gat ttt tct aaa gcc gct ttc	789
Lys Phe Gln Lys Asn Gln Met Ala Pro Asp Phe Ser Lys Ala Ala Phe	
195 200 205	
gct tta act cct ggg gat tac act aaa acc cct gtt aaa aca gag ttt	837
Ala Leu Thr Pro Gly Asp Tyr Thr Lys Thr Pro Val Lys Thr Glu Phe	
210 215 220	
ggt tat cat att atc tat ttg att tct aaa gat agc cct gta act tat	885
Gly Tyr His Ile Ile Tyr Leu Ile Ser Lys Asp Ser Pro Val Thr Tyr	
225 230 235 240	
act tat gaa cag gct aaa cct acc att aag ggg atg tta caa gaa aag	933
Thr Tyr Glu Gln Ala Lys Pro Thr Ile Lys Gly Met Leu Gln Glu Lys	
245 250 255	
ctt ttc caa gaa cgc atg aat caa cgc att gag gaa cta aga aag cac	981
Leu Phe Gln Glu Arg Met Asn Gln Arg Ile Glu Glu Leu Arg Lys His	
260 265 270	
gct aaa att gtt atc aac aag taattgtatga ggtgttatca tgtagttaa	1032
Ala Lys Ile Val Ile Asn Lys	
275	

aggcaatgaa attttattga aagcccataa agaaggttat ggggtggggg cgttaattt 1092
cgtgaatttt gaaatgctaa acgctatttt tgaagcagga aatgaggaaa attcccc 1149

<210> 2
<211> 299
<212> PRT
<213> Helicobacter pylori

<220>
<221> SIGNAL
<222> (1)...(20)

<400> 2
Met Lys Lys Asn Ile Leu Asn Leu Ala Leu Val Gly Ala Leu Ser Thr
-20 -15 -10 -5
Ser Phe Leu Met Ala Lys Pro Ala His Asn Ala Asn Asn Ala Thr His
1 5 10
Asn Thr Lys Lys Thr Thr Asp Ser Ser Ala Gly Val Leu Ala Thr Val
15 20 25
Asp Gly Arg Pro Ile Thr Lys Ser Asp Phe Asp Met Ile Lys Gln Arg
30 35 40
Asn Pro Asn Phe Asp Phe Asp Lys Leu Lys Glu Lys Glu Lys Glu Ala
45 50 55 60
Leu Ile Asp Gln Ala Ile Arg Thr Ala Leu Val Glu Asn Glu Ala Lys
65 70 75
Thr Glu Lys Leu Asp Ser Thr Pro Glu Phe Lys Ala Met Met Glu Ala
80 85 90
Val Lys Lys Gln Ala Leu Val Glu Phe Trp Ala Lys Lys Gln Ala Glu
95 100 105
Glu Val Lys Lys Val Gln Ile Pro Glu Lys Glu Met Gln Asp Phe Tyr
110 115 120
Asn Ala Asn Lys Asp Gln Leu Phe Val Lys Gln Glu Ala His Ala Arg
125 130 135 140
His Ile Leu Val Lys Thr Glu Asp Glu Ala Lys Arg Ile Ile Ser Glu
145 150 155
Ile Asp Lys Gln Pro Lys Ala Lys Glu Ala Lys Phe Ile Glu Leu
160 165 170
Ala Asn Arg Asp Thr Ile Asp Pro Asn Ser Lys Asn Ala Gln Asn Gly
175 180 185
Gly Asp Leu Gly Lys Phe Gln Lys Asn Gln Met Ala Pro Asp Phe Ser
190 195 200
Lys Ala Ala Phe Ala Leu Thr Pro Gly Asp Tyr Thr Lys Thr Pro Val
205 210 215 220
Lys Thr Glu Phe Gly Tyr His Ile Ile Tyr Leu Ile Ser Lys Asp Ser
225 230 235
Pro Val Thr Tyr Thr Tyr Glu Gln Ala Lys Pro Thr Ile Lys Gly Met
240 245 250
Leu Gln Glu Lys Leu Phe Gln Glu Arg Met Asn Gln Arg Ile Glu Glu
255 260 265
Leu Arg Lys His Ala Lys Ile Val Ile Asn Lys
270 275

<210> 3
<211> 1448
<212> DNA
<213> Helicobacter pylori

<220>
<221> CDS
<222> (118) ... (1314)

<400> 3
ctcttgaatg gcgataagac aaaaatgtct taaattttgtt ggttagcattt aggaatactt 60
aggattttgtt ttagtataat tctaaaatcc atttcaaaaa attaaggaga aatacaa atg 120
Met
1
gca aaa gaa aag ttt aac aga act aag ccg cat gtt aat att gga acc 168
Ala Lys Glu Lys Phe Asn Arg Thr Lys Pro His Val Asn Ile Gly Thr
5 10 15
att ggg cat gta gac cat ggt aaa acg act ttg agt gca gcg att tca 216
Ile Gly His Val Asp His Gly Lys Thr Thr Leu Ser Ala Ala Ile Ser
20 25 30
gcg gtg ctt tct ttg aaa ggt ctt gca gaa atg aaa gac tat gat aat 264
Ala Val Leu Ser Leu Lys Gly Leu Ala Glu Met Lys Asp Tyr Asp Asn
35 40 45
att gat aac gcc cct gaa gaa aaa gaa aga ggg atc act atc gct act 312
Ile Asp Asn Ala Pro Glu Glu Lys Glu Arg Gly Ile Thr Ile Ala Thr
50 55 60 65
tct cac att gaa tat gag act gaa aac aga cac tat gcg cat gtg gat 360
Ser His Ile Glu Tyr Glu Thr Glu Asn Arg His Tyr Ala His Val Asp
70 75 80
tgc cca gga cac gct gac tat gta aaa aac atg atc acc ggt gcg gcg 408
Cys Pro Gly His Ala Asp Tyr Val Lys Asn Met Ile Thr Gly Ala Ala
85 90 95
caa atg gac gga gcg att ttg gtt gtt tct gca gct gat ggc cct atg 456
Gln Met Asp Gly Ala Ile Leu Val Val Ser Ala Ala Asp Gly Pro Met
100 105 110
cct caa act agg gag cat atc tta ttg tct cgt caa gta ggc gtg cct 504
Pro Gln Thr Arg Glu His Ile Leu Leu Ser Arg Gln Val Gly Val Pro
115 120 125
cac atc gtt gtt ttc tta aac aaa caa gac atg gta gat gac caa gaa 552
His Ile Val Val Phe Leu Asn Lys Gln Asp Met Val Asp Asp Gln Glu
130 135 140 145
ttg tta gaa ctt gta gaa atg gaa gtg cgc gaa ttg ttg agc gcg tat 600
Leu Leu Glu Leu Val Glu Met Glu Val Arg Glu Leu Leu Ser Ala Tyr
150 155 160
gaa ttt cct ggc gat gac act cct atc gta gcg ggt tca gct tta aga 648
Glu Phe Pro Gly Asp Asp Thr Pro Ile Val Ala Gly Ser Ala Leu Arg
165 170 175
gct tta gaa gaa gca aag gct ggt aat gtg ggt gaa tgg ggt gaa aaa 696
Ala Leu Glu Glu Ala Lys Ala Gly Asn Val Gly Glu Trp Gly Glu Lys
180 185 190
gtg ctt aaa ctt atg gct gaa gtg gat gcc tat atc cct act cca gaa 744

Val	Leu	Lys	Leu	Met	Ala	Glu	Val	Asp	Ala	Tyr	Ile	Pro	Thr	Pro	Glu	
195					200					205						
aga	gac	act	gaa	aaa	act	ttc	ttg	atg	ccg	gtt	gaa	gat	gtg	ttc	tct	792
Arg	Asp	Thr	Glu	Lys	Thr	Phe	Leu	Met	Pro	Val	Glu	Asp	Val	Phe	Ser	
210					215					220					225	
att	gcg	ggt	aga	ggg	act	gtg	gtt	aca	ggt	agg	att	gaa	aga	ggc	gtg	840
Ile	Ala	Gly	Arg	Gly	Thr	Val	Val	Thr	Gly	Arg	Ile	Glu	Arg	Gly	Val	
					230					235					240	
gtg	aaa	gta	ggc	gat	gaa	gtg	gaa	atc	gtt	ggt	atc	aga	cct	aca	caa	888
Val	Lys	Val	Gly	Asp	Glu	Val	Glu	Ile	Val	Gly	Ile	Arg	Pro	Thr	Gln	
					245					250					255	
aaa	acg	act	gta	acc	ggt	gta	gaa	atg	ttt	agg	aaa	gag	ttg	gaa	aaa	936
Lys	Thr	Thr	Val	Thr	Gly	Val	Glu	Met	Phe	Arg	Lys	Glu	Leu	Glu	Lys	
					260					265					270	
ggt	gaa	gcc	ggc	gat	aat	gtg	ggc	gtg	ctt	ttg	aga	gga	act	aaa	aaa	984
Gly	Glu	Ala	Gly	Asp	Asn	Val	Gly	Val	Leu	Leu	Arg	Gly	Thr	Lys	Lys	
					275					280					285	
gaa	gaa	gtg	gaa	cgc	ggt	atg	gtt	cta	tgc	aaa	cca	ggt	tct	atc	act	1032
Glu	Glu	Val	Glu	Arg	Gly	Met	Val	Leu	Cys	Lys	Pro	Gly	Ser	Ile	Thr	
					290					295					305	
ccg	cac	aag	aaa	ttt	gag	gga	gaa	att	tat	gtc	ctt	tct	aaa	gaa	gaa	1080
Pro	His	Lys	Lys	Phe	Glu	Gly	Glu	Ile	Tyr	Val	Leu	Ser	Lys	Glu	Glu	
					310					315					320	
ggc	ggg	aga	cac	act	cca	ttc	ttc	acc	aat	tac	cgc	ccg	caa	ttc	tat	1128
Gly	Gly	Arg	His	Thr	Pro	Phe	Phe	Thr	Asn	Tyr	Arg	Pro	Gln	Phe	Tyr	
					325					330					335	
gtg	cgc	aca	act	gat	gtg	act	ggc	tct	atc	acc	ctt	cct	gaa	ggc	gta	1176
Val	Arg	Thr	Thr	Asp	Val	Thr	Gly	Ser	Ile	Thr	Leu	Pro	Glu	Gly	Val	
					340					345					350	
gaa	atg	gtt	atg	cct	ggc	gat	aat	gtg	aaa	atc	act	gta	gag	ttg	att	1224
Glu	Met	Val	Met	Pro	Gly	Asp	Asn	Val	Lys	Ile	Thr	Val	Glu	Leu	Ile	
					355					360					365	
agc	cct	gtt	gcg	tta	gag	ttg	gga	act	aaa	ttt	gct	att	cgt	gaa	ggc	1272
Ser	Pro	Val	Ala	Leu	Glu	Leu	Gly	Thr	Lys	Phe	Ala	Ile	Arg	Glu	Gly	
					370					375					380	
ggt	agg	acc	gtt	ggt	gct	gtt	gtg	agc	aat	att	att	gaa				1314
Gly	Arg	Thr	Val	Gly	Ala	Gly	Val	Val	Ser	Asn	Ile	Ile	Glu			
					390					395						
taatatttagc	aaaaagagag	ttaccataaa	gggtcattat	gaaaagttaaa	atagggttga											1374
agtgttctga	tttgtaaagat	atcaattaca	gcacaaccaa	gaacgcataaa	actaacactg											1434
aaaaactgga	gctt															1448
<210>	4															
<211>	399															
<212>	PRT															
<213>	Helicobacter pylori															

<400> 4

Met Ala Lys Glu Lys Phe Asn Arg Thr Lys Pro His Val Asn Ile Gly
1 5 10 15
Thr Ile Gly His Val Asp His Gly Lys Thr Thr Leu Ser Ala Ala Ile
20 25 30
Ser Ala Val Leu Ser Leu Lys Gly Leu Ala Glu Met Lys Asp Tyr Asp
35 40 45
Asn Ile Asp Asn Ala Pro Glu Glu Lys Glu Arg Gly Ile Thr Ile Ala
50 55 60
Thr Ser His Ile Glu Tyr Glu Thr Glu Asn Arg His Tyr Ala His Val
65 70 75 80
Asp Cys Pro Gly His Ala Asp Tyr Val Lys Asn Met Ile Thr Gly Ala
85 90 95
Ala Gln Met Asp Gly Ala Ile Leu Val Val Ser Ala Ala Asp Gly Pro
100 105 110
Met Pro Gln Thr Arg Glu His Ile Leu Leu Ser Arg Gln Val Gly Val
115 120 125
Pro His Ile Val Val Phe Leu Asn Lys Gln Asp Met Val Asp Asp Gln
130 135 140
Glu Leu Leu Glu Leu Val Glu Met Glu Val Arg Glu Leu Leu Ser Ala
145 150 155 160
Tyr Glu Phe Pro Gly Asp Asp Thr Pro Ile Val Ala Gly Ser Ala Leu
165 170 175
Arg Ala Leu Glu Glu Ala Lys Ala Gly Asn Val Gly Glu Trp Gly Glu
180 185 190
Lys Val Leu Lys Leu Met Ala Glu Val Asp Ala Tyr Ile Pro Thr Pro
195 200 205
Glu Arg Asp Thr Glu Lys Thr Phe Leu Met Pro Val Glu Asp Val Phe
210 215 220
Ser Ile Ala Gly Arg Gly Thr Val Val Thr Gly Arg Ile Glu Arg Gly
225 230 235 240
Val Val Lys Val Gly Asp Glu Val Glu Ile Val Gly Ile Arg Pro Thr
245 250 255
Gln Lys Thr Thr Val Thr Gly Val Glu Met Phe Arg Lys Glu Leu Glu
260 265 270
Lys Gly Glu Ala Gly Asp Asn Val Gly Val Leu Leu Arg Gly Thr Lys
275 280 285
Lys Glu Glu Val Glu Arg Gly Met Val Leu Cys Lys Pro Gly Ser Ile
290 295 300
Thr Pro His Lys Lys Phe Glu Gly Glu Ile Tyr Val Leu Ser Lys Glu
305 310 315 320
Glu Gly Gly Arg His Thr Pro Phe Phe Thr Asn Tyr Arg Pro Gln Phe
325 330 335
Tyr Val Arg Thr Thr Asp Val Thr Gly Ser Ile Thr Leu Pro Glu Gly
340 345 350
Val Glu Met Val Met Pro Gly Asp Asn Val Lys Ile Thr Val Glu Leu
355 360 365
Ile Ser Pro Val Ala Leu Glu Leu Gly Thr Lys Phe Ala Ile Arg Glu
370 375 380
Gly Gly Arg Thr Val Gly Ala Gly Val Val Ser Asn Ile Ile Glu
385 390 395

<210> 5

<211> 32

<212> DNA

<213> Helicobacter pylori

<400> 5

cgcgatccg aatgaaaaaa aatatcttaa at	32
<210> 6	
<211> 30	
<212> DNA	
<213> Helicobacter pylori	
<400> 6	
ccgctcgagt tacttgtga taacaatttt	30
<210> 7	
<211> 32	
<212> DNA	
<213> Helicobacter pylori	
<400> 7	
cgcgatccg aatggcaaaa gaaaagttta ac	32
<210> 8	
<211> 30	
<212> DNA	
<213> Helicobacter pylori	
<400> 8	
ccgctcgagt tattcaataa tattgctcac	30
<210> 9	
<211> 22	
<212> PRT	
<213> Helicobacter pylori	
<400> 9	
Met Lys Glu Lys Phe Asn Arg Thr Lys Pro His Val Asn Ile Gly Thr	
1 5 10 15	
Ile Gly His Val Asp His	
20	
<210> 10	
<211> 13	
<212> PRT	
<213> Helicobacter pylori	
<400> 10	
Ala His Asn Ala Asn Asn Ala Thr His Asn Thr Lys Lys	
1 5 10	
<210> 11	
<211> 6	
<212> PRT	
<213> Helicobacter pylori	
<400> 11	
Lys Pro Ala His Asn Ala	
1 5	
<210> 12	

<211> 9
<212> PRT
<213> Helicobacter pylori

<400> 12
Ile Asp Lys Gln Pro Lys Ala Lys Lys
1 5

<210> 13
<211> 8
<212> PRT
<213> Helicobacter pylori

<400> 13
Phe Trp Ala Lys Lys Gln Ala Glu
1 5

<210> 14
<211> 29
<212> DNA
<213> Helicobacter pylori

<400> 14
gtggagaaca cacaatgaaa aaaaatatc 29

<210> 15
<211> 31
<212> DNA
<213> Helicobacter pylori

<400> 15
gctaataattt ttcaataata ttgctcaca c 31

<210> 16
<211> 27
<212> DNA
<213> Helicobacter pylori

<400> 16
ggagaaatac aaatggcaaa agaaaaag 27

<210> 17
<211> 31
<212> DNA
<213> Helicobacter pylori

<400> 17
gctaataattt ttcaataata ttgctcaca c 31

<210> 18
<211> 24
<212> DNA
<213> Helicobacter pylori

<400> 18
cataacgcaa ataacgctac gcat 24